Los Angeles Trade Tech. Jr. College
Instructor: R.H. Oeffinger

EX-

Name ______________

Date ________

ELECTRONICS TECHNICIAN

EXAMINATION

AC Theory

Part I

Instructions; the following are multiple choice, select the most correct answer by circling the letter of your choice:

1. In a series reactive circuit
    - a. voltage is equal in all parts.
    - b. resistance increases the phase angle.
    - [✓ c.] current is the same in all parts.
    - d. None of the above are correct.
2. In a ~~series~~ parallel reactive circuit which of the statements in question 1. is correct?
    - [✓ a.]
    - b.
    - c.
    - d.
3. The reference vector for a series circuit is the
    - [✓ a.] current.
    - b. voltage.
    - c. resistance.
    - d. reactance.
4. In a parallel circuit which of the above statements in #3 is correct?
    - a.
    - [✓ b.]
    - c.
    - d.
5. The resultant vectors in a series circuit can be the
    - [✓ a.] resistance and reactance.
    - b. current and voltage.
    - c. impedance and voltage.
6. The power factor is the ratio of
    - a. voltage to total current.
    - b. impedance to reactance.
    - [✓ c.] resistance to impedance.
    - d. apparent power to true power.
7. The "Q" of a resonant circuit is
    - a. $\frac{R}{X_L}$
    - b. $\frac{L}{R}$
    - [✓ c.] $\frac{X_L}{R}$
    - d. $\frac{R}{Z}$

Electronics-Exam--(cont.)
AC Theory- Part I

8. In a series resonant circuit, a high "Q"
   a. will give low current.
   b. increases the resistance.
   [✓ c.] increases current.
   d. causes more power losses.

9. Increasing the resistance in a resonant circuit increases the
   a. "Q".
   b. current gain.
   [✓ c.] power losses.
   d. resonant curve.

PF = TP/AP

10. Negative power curves show
   a. power losses.
   b. resistance in the circuit.
   [✓ c.] reactance in the circuit.
   d. none of the above.

11. In aLBR circuit the time constant
   a. decreases as L increases.
   [✓ b.] increases as R decreases.
   c. increases as R increases.
   d. None of the above.

12. For a selective resonant circuit the
   a. "Q" must be MXgM low.
   b. inductance must be low.
   [✓ c.] resistance must be low.
   d. inductive and capacitive reactance must be equal.

13. At resonance the power factor for a broad tuned circuit is
   a. low.
   [✓ b.] high.
   c. not important.

14. In a series resonant circuit below resonance
   [✓ a.] it is capacitive.
   b. it is inductive.
   c. current is high.
   d. current lags the applied voltage.

15. In a parallel circuit at above resonance
   a. there is no current flow.
   b. current lags the applied voltage.
   c. more current goes through the inductance.
   [✓ d.] More current goes through the capacitance.

Give the equations for the following:

16. X_L - $2\pi FL$

17. X_c - $\frac{1}{2\pi FC}$

Electronics-Exam.--(cont.)
AC Theory Part I

18. Resonant Frequency = $F = \frac{1}{2\pi\sqrt{LC}}$

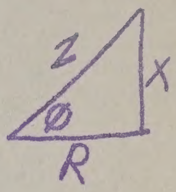
19. Power factor by power ratio.= $\frac{TP}{AP} = \frac{R}{Z}$

20. Cosine Ø = $\frac{R}{Z}$

21. Sine Ø = $\frac{X}{Z}$

22. Tangent Ø = $\frac{X}{R}$

use sides as labled



23. Complete Z = $\sqrt{R^2+X^2}$

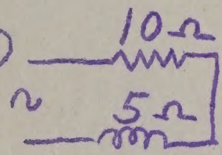
24. CompleteP.F.= cos Ø

25 Average power = $I^2R = EI\cos\theta$

PART II

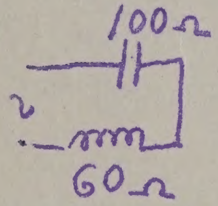
Solve and draw appx vectors for the following, and give Polar and Rect. values where possible:

①



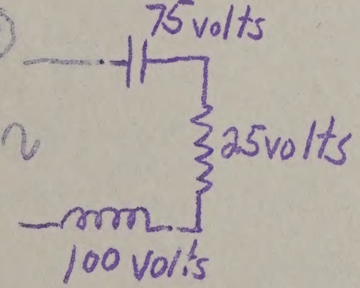
Z=?

②



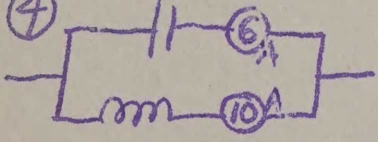
Z=?

③



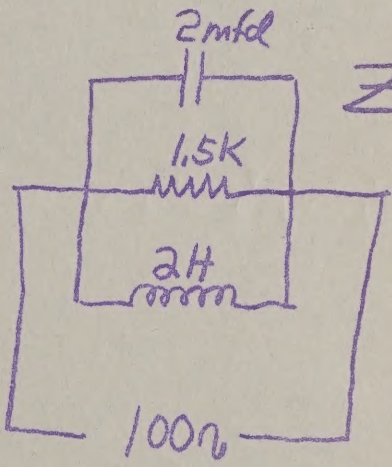
E Applied = ?

④



I_t = ?

⑤



Z=?